

Amendment
Serial No. 10/694,456

Docket 5000-1-472

IN THE CLAIMS:

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OCT 31 2007

Please amend the claims as follows:

1-4 (Canceled).

5. (Previously Presented) A Wavelength division multiplexing-passive optical network that enables an integration of broadcast and communication data, the network comprising:

an optical line terminal to (1) receive a digital broadcast signal from a broadcasting network and a first communication signal from an internet protocol network, and (2) transmit the digital broadcast signal and the first communication signal as a single integrated optical signal;

an optical network terminal/optical network unit as a user-side device for transferring (1) the single integrated optical signal, from the optical line terminal, to a service user, and (2) user data from the service user to the optical line terminal;

a first WDM demultiplexer for WDM-demultiplexing the single integrated optical signal from the optical line terminal, and transferring it to the optical network terminal/optical network unit; and

a first WDM multiplexer for WDM-multiplexing the user data from the optical network terminal/optical network unit and transferring it to the optical line terminal, wherein the optical line terminal is further enabled to transfer a second communication signal, received from the service user, to the Internet protocol network;

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wherein the user data includes channel-information data of a digital broadcast desired by the service user and the second communication signal; and

wherein the optical line terminal further includes:

a broadcast switch for switching digital broadcast data from the broadcasting network;

a broadcast channel controller for selecting the digital broadcast signal desired by the service user by controlling the broadcast switch according to the channel-information data included in the user data;

a first Ethernet switch for switching each of the first and second communication signal so as to transmit the second communication signal included in the user data to the Internet protocol network, or to transmit the first communication signal to the optical network terminal/optical network unit;

a communication/broadcast multiplexer for multiplexing the first communication signal and the digital broadcast signal;

a second Ethernet switch for separating the user data received from the service user into the channel-information data and the second communication signal from the service user;

a first optical transmitter for optically modulating the first communication signal and the digital broadcast signal, multiplexed through the communication/broadcast multiplexer, into the single integrated optical signal by its electro-optical conversion;

a second WDM multiplexer for multiplexing wavelength-by-wavelength signals, optically modulated through the first optical transmitter, and transferring them to the optical network terminal/optical network unit;

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a second WDM demultiplexer for separating optical signals, transmitted from the optical network terminal/optical network unit, according to their wavelength; and

a first optical receiver for photoelectrically converting the optical signals separated according to their wavelength through the second WDM demultiplexer.

6. (Currently Amended) The network as set forth in claim 5,

~~A Wavelength division multiplexing passive optical network that enables an integration of broadcast and communication data, the network comprising:~~

~~— an optical line terminal to (1) receive a digital broadcast signal from a broadcasting network and a first communication signal from an internet protocol network, and (2) transmit the digital broadcast signal and the first communication signal as a single integrated optical signal;~~

~~— an optical network terminal/optical network unit as a user side device for transferring (1) the single integrated optical signal, from the optical line terminal, to a service user, and (2) user data from the service user to the optical line terminal;~~

~~— a first WDM demultiplexer for WDM demultiplexing the single integrated optical signal from the optical line terminal, and transferring it to the optical network terminal/optical network unit; and~~

~~— a first WDM multiplexer for WDM multiplexing the user data from the optical network terminal/optical network unit and transferring it to the optical line terminal;~~

~~wherein the optical line terminal is further enabled to transfer a second communication signal, received from the service user, to the Internet protocol network;~~

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~~wherein the user data includes channel information data of a digital broadcast desired by the service user and the second communication signal; and~~

wherein the optical network terminal/optical network unit includes:

a second optical receiver for receiving the single integrated optical signal transmitted from the optical line terminal through the first WDM demultiplexer, and photoelectrically converting the received signal;

a communication/broadcast demultiplexer for separating the single integrated optical signal, received through the second optical receiver, into the first communication signal and the digital broadcast signal;

a hub switch for forming the user data by joining together the channel-information data for selecting the digital broadcast signal desired by the service user and the second communication signal provided from the service user to the Internet protocol network; and

a second optical transmitter for electro-optically converting the user data, joined together through the hub switch, to be optically modulated, and transmitting it to the first WDM multiplexer for the purpose of transmitting it to the optical line terminal.

7. (Previously Presented) The network as set forth in claim 6, wherein a single wavelength for optical transmission between the optical line terminal and the optical network terminal/optical network unit is assigned to each service user.

8. (Previously Presented) The network as set forth in claim 6, wherein the optical line terminal further includes an optical amplifier for optically-modulating and

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amplifying an analog broadcast signal, and an optical coupler for combining the analog broadcast signal with the single integrated optical signal, so as to receive and transmit the analog broadcast signal,

the network further comprising:

an optical splitter for separating an optical signal, combined with the analog broadcast signal, from the optical line terminal into the analog broadcast signal and the single integrated optical signal, and transmitting the separated signals;

a photoelectric converter for photoelectrically converting the analog broadcast signal separated through the optical splitter; and

a radio frequency) splitter for distributing the photoelectrically-converted electrical analog broadcast signal to the optical network terminal/optical network unit.

9-12. (Canceled).

13. (Currently Amended)[[.]] A wavelength division multiplexing-passive optical network that enables an integration of broadcast and communication data, the network comprising:

an optical line terminal to (1) receive a digital broadcasting signal from a broadcasting network and a first communication signal from an Internet protocol network, and (2) transmit the digital broadcast signal and the first communication signals as a single integrated optical signal;

an optical network terminal/optical network unit as a user-side device for transferring (1) the single integrated optical signal, from the optical line terminal, to a

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service user, and (2) user data from the service user to the optical line terminal using an optical signal having a wavelength different from the single integrated optical signal; and

a first WDM multiplexer/demultiplexer for (1) receiving and WDM-demultiplexing the single integrated optical signal from the optical line terminal, (2) transferring the integrated optical signal to the optical network terminal/optical network unit, (3) WDM-multiplexing the user data from the optical network terminal/optical network unit, and (4) transferring the user data to the optical line terminal;

wherein the optical line terminal is further enabled to transfer a second communication signal, received from the service user, to the IP network;

wherein the user data includes channel-information data of a digital broadcast desired by the service user and the second communication signal;

and wherein the optical line terminal including:

a broadcast switch for switching digital broadcast data from the broadcasting network;

a broadcast channel controller for selecting the digital broadcast signal desired by the service user by controlling the broadcast switch according to the channel-information data included in the user data;

a first Ethernet switch for switching each of the first and second communication signals so as to transmit the second communication signal included in the user data to the Internet protocol network, or to transmit the first communication signal to the optical network terminal/optical network unit;

a communication/broadcast multiplexer for multiplexing the first communication signal and the digital broadcast signal;

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a second Ethernet switch for separating the user data received from the service user into the channel-information data and the second communication signal from the service user;

a first optical transmitter for optically modulating the first communication signal and the digital broadcast signal, multiplexed through the communication/broadcast multiplexer, into the single integrated optical signal by its electro-optical conversion;

a second WDM multiplexer/demultiplexer for multiplexing wavelength-by-wavelength signals, optically modulated through the first optical transmitter, and transferring them to the optical network terminal/optical network unit, and further separating optical signals, transmitted from the optical network terminal/optical network unit, according to their wavelengths; and

a first optical receiver for photoelectrically converting the optical signals separated according to their wavelength through the second WDM multiplexer/demultiplexer.

14. (Currently Amended) The network as set forth in claim 13,

~~A wavelength division multiplexing passive optical network that enables an integration of broadcast and communication data, the network comprising:~~

~~— an optical line terminal to (1) receive a digital broadcasting signal from a broadcasting network and a first communication signal from an Internet protocol network, and (2) transmit the digital broadcast signal and the first communication signals as a single integrated optical signal;~~

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~~an optical network terminal/optical network unit as a user-side device for transferring (1) the single integrated optical signal, from the optical line terminal, to a service user, and (2) user data from the service user to the optical line terminal using an optical signal having a wavelength different from the single integrated optical signal; and~~
~~a first WDM multiplexer/demultiplexer for (1) receiving and WDM demultiplexing the single integrated optical signal from the optical line terminal, (2) transferring the integrated optical signal to the optical network terminal/optical network unit, (3) WDM multiplexing the user data from the optical network terminal/optical network unit, and (4) transferring the user data to the optical line terminal;~~

~~wherein the user data includes channel information data of a digital broadcast desired by the service user and the second communication signal;~~

~~and wherein the optical network terminal/optical network unit includes:~~

a second optical receiver for receiving the single integrated optical signal, demultiplexed through the first WDM multiplexer/demultiplexer and transmitted from the optical line terminal, and photoelectrically converting the received signal;

a communication/broadcast demultiplexer for separating the single integrated optical signal, received through the second optical receiver, into the first communication signal and the digital broadcast signal;

a hub switch for forming the user data by joining together the channel-information data for selecting the digital broadcast signal desired by the service user and the second communication data provided from the service user to the Internet protocol network; and

a second optical transmitter for electro-optically converting the user data, joined together through the hub switch, to be optically modulated, and transmitting it to the first

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WDM multiplexer/multiplexer for the purpose of transmitting it to the optical line terminal.

15. (Previously Presented) The network as set forth in claim 13, wherein the optical line terminal further includes an optical amplifier for optically-modulating and amplifying an analog broadcast signal, and an optical coupler for combining the analog broadcast signal with the single integrated optical signal, so as to receive and transmit the analog broadcast signal,

the network further comprising:

an optical splitter for separating an optical signal, combined with the analog broadcast signal, from the optical line terminal into the analog broadcast signal and the single integrated optical signal, and transmitting the separated signals;

a photoelectric converter for photoelectrically converting the analog broadcast signal separated through the optical splitter; and

a radio frequency splitter for distributing the photoelectrically-converted electrical analog broadcast signal to the optical network terminal/optical network unit.